

SUPPORT FOR THE AMENDMENT

This Amendment cancels withdrawn Claims 1-2, 6, 9 and 11-12. Support for the amendments is found in the specification and claims as originally filed. No new matter would be introduced by entry of these amendments.

Upon entry of these amendments, Claims 3-5, 7-8 and 13 will be pending in this application. Claim 3 is independent.

REQUEST FOR RECONSIDERATION

Applicants respectfully request entry of the foregoing and reexamination and reconsideration of the application, as amended, in light of the remarks that follow.

The present invention relates to the manufacture of hot-rolled and cold-rolled austenitic iron/carbon/manganese steel sheets exhibiting a particularly advantageous combination of mechanical strength and elongation at fracture, excellent formability and a high tensile strength in the presence of defects or stress concentrations. Specification at page 1, lines 7-14.

Claims 3-5, 7-8 and 13 are rejected under 35 U.S.C. §103(a) over U.S. Patent No. 6,358,338 ("Guelton") in view of WO 93/13233 ("Kim") and further in view of "Design for Deformation Processes", ASM Handbooks Online, Vol. 20 ("Ferguson").

Guelton discloses a process for producing strip made of an iron-carbon-manganese alloy, in which a thin strip is cast directly from a liquid metal; the strip is cold rolled; and the strip undergoes recrystallization annealing. Guelton at abstract. The directly cast strip may be subjected to optional hot rolling and optional coiling. Guelton at column 2, lines 6-7, 24-26; column 4, lines 19-20. The Final Rejection relies on Kim for disclosing temperature during hot-rolling. The Final Rejection relies on Ferguson for suggesting that the length of time between hot-rolling and cooling operations is a result effective variable.

Any *prima facie* case of obviousness based on the cited prior art is rebutted by the significant improvement in P ($= \text{strength} \times \text{elongation at break}$) that is achieved by the present invention over the independent Claim 3 range in which "said sheet is coiled at a temperature below 580°C ".

This is demonstrated in Figure A of the attached Declaration Under 37 CFR 1.132. Figure A combines Figures 3 and 5 of the specification. Figures 3, 5 and A are reproduced below:

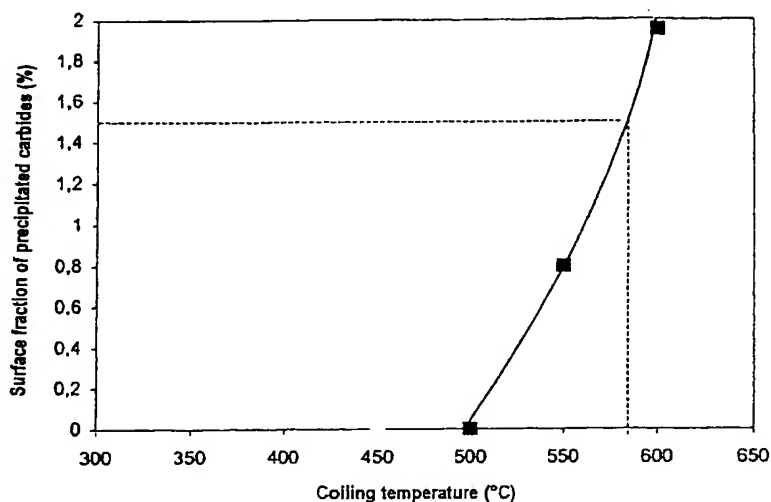


Figure 3

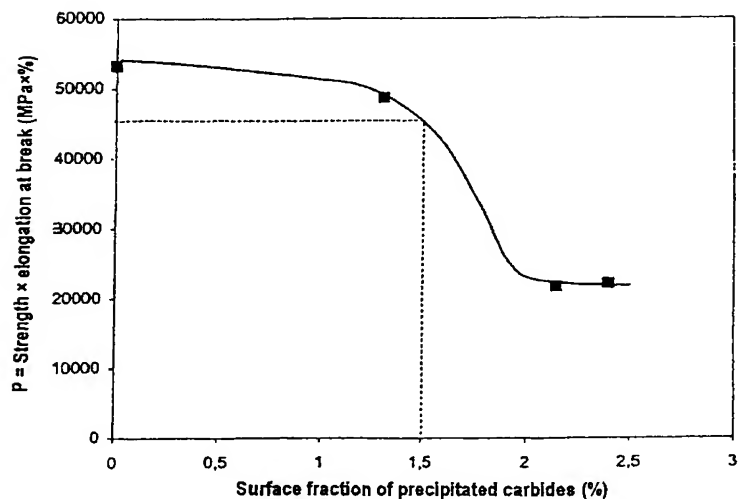


Figure 5

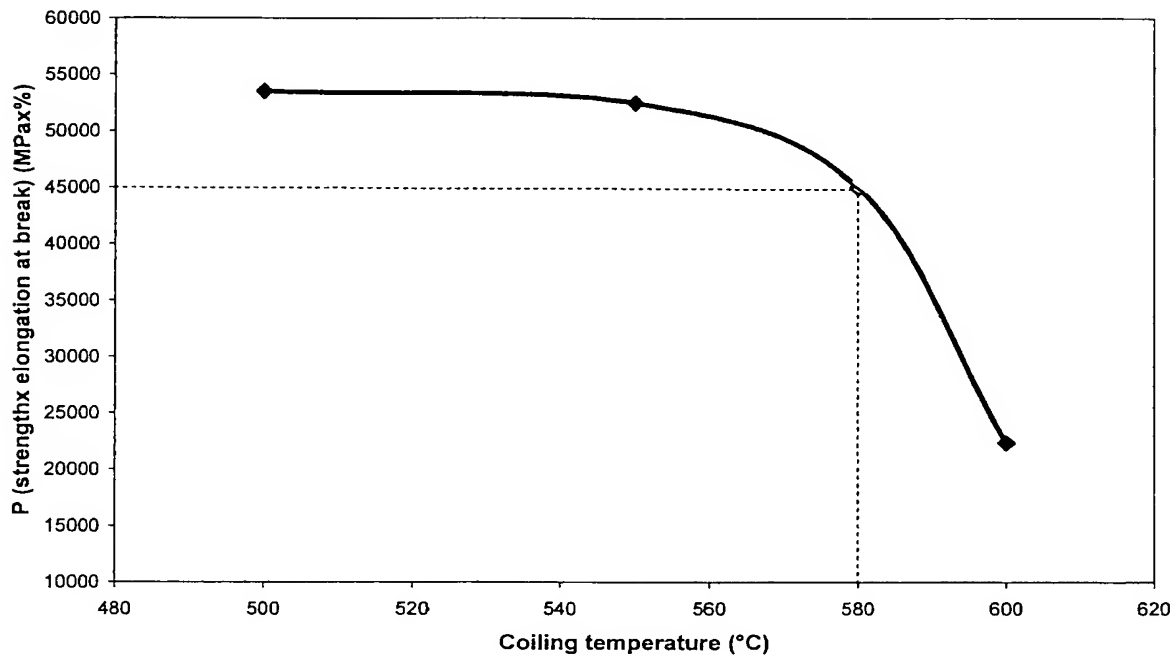


Figure A

Figure A shows that P drops very sharply when the coiling temperature is above 580°C and is significantly higher when the coiling temperature is below 580°C.

As shown in Figure 3, coiling above 580°C increases the surface fraction of precipitated carbides to above 1.5%. Figure 5 shows that a surface fraction of precipitated carbides of 1.5% results in a P of 45000 MPax%. To obtain a value of P greater than 45000 MPax%, it is necessary for the surface fraction of precipitated carbides to be less than 1.5%. Specification at page 12, lines 6-8.

Thus, the values of P greater than 45000 MPax% shown in Figure A reflect a decrease in the surface fraction of precipitated carbides to less than 1.5% that occurs when coiling temperature is below 580°C.

The cited prior art fails to suggest the significant improvement in P (= strength x elongation at break) that is achieved by the present invention over the independent Claim 3 range in which "said sheet is coiled at a temperature below 580°C". Guelton in particular dismisses the importance of coiling temperature.

After this optional but preferable hot rolling, the **strip** may possibly be **coiled**, here again **at a temperature which is of hardly any importance other than from a practical standpoint** since **no appreciable metallurgical transformation, other than grain growth**, is liable to occur during the period during which the coiled strip is cooled at a low rate. In any case, the grain growth will be only of limited extent, the effects of which will be easy to eliminate by the cold-rolling and annealing operations which follow. Optionally, the time during which the strip is in coil form may be the occasion to complete the precipitation of carbides, nitrides and carbonitrides. Guelton at column 4, lines 19-29 (emphasis added).

There is no recognition in the cited prior art of the particular importance of keeping coiling temperature below 580°C to avoid carbide precipitation that significantly lowers the value of P.

Furthermore, according to Guelton coiling temperature has an influence only on grain size. However, as shown in Declaration Under 37 CFR 1.132 at Figure B, in the iron/carbon/manganese steel featured in the present invention no grain growth occurs at temperatures below 700°C. Thus, the skilled artisan wishing to influence grain size based on Guelton's disclosure would have no metallurgical reason to perform coiling at a temperature below 700°C since the effect on grain size is saturated. There is no reasonable expectation that Guelton would have led the skilled artisan to a coiling temperature below 700°C, such as independent Claim 3's coiling temperatures "below 580°C".

Because the cited prior art fails to suggest the significant improvement in P (= strength x elongation at break) that is achieved by the present invention over the independent Claim 3 range in which "said sheet is coiled at a temperature below 580°C", any *prima facie*

case of obviousness based on the cited prior art is rebutted. Thus, the rejection under 35 U.S.C. §103(a) should be withdrawn.

In view of the foregoing amendments and remarks, Applicant respectfully submits that the application is in condition for allowance. Applicant respectfully requests favorable consideration and prompt allowance of the application.

Should the Examiner believe that anything further is necessary in order to place the application in even better condition for allowance, the Examiner is invited to contact Applicants' undersigned attorney at the telephone number listed below.

Respectfully submitted,

Customer Number

22850

Tel: (703) 413-3000
Fax: (703) 413 -2220
(OSMMN 08/07)

OBLON, SPIVAK, McCLELLAND,
MAIER & NEUSTADT, P.C.
Norman F. Oblon



Corwin P. Umbach, Ph.D.
Registration No. 40,211

Attached: Declaration Under 37 CFR 1.132